

Amendment to the Claims:

1. (Cancelled)

2. (Currently Amended) The ~~A~~ method ~~of claim 1~~ for k-space data acquisition for magnetic resonance imaging (MRI) using of at least first and second k-spaces for interleaved data acquisition, the at least first and second k-spaces covering substantially the same 2D physical region, the k-spaces having a first coordinate axis and a second coordinate axis, the method comprising:

- a) sampling into a first direction along the first coordinate axis,
- b) applying a first compensation pulse,
- c) sampling into a second direction along the first coordinate axis, the second direction being opposite to the first direction,
- d) applying a second compensation pulse,
- e) incrementing a sampling position on the second coordinate axis,
- f) repetitively carrying out the steps a) to ~~[[d]]~~ e),
- g) generating a first image with first characteristics based on the data samples being acquired in the first direction,
- h) generating a second image with second characteristics based on the data samples acquired in the second direction, and,
- i) combining the first and second images into one image.

3. (Currently Amended) The method of claim ~~[[1]]~~ 2, the first and second compensation pulses being z-shimming pulses.

4. (Currently Amended) The method of claim ~~[[1]]~~ 2, further comprising incrementing a sampling position on the second coordinate axis after each step a) and ~~[[/ or]]~~ after each step b).

5. (Currently Amended) The method of claim ~~[[1]]~~ 2, further comprising performing a partial k-space data acquisition by means of the sampling in steps a) and c).

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) The method of claim [[1]] 2, whereby a number of n k-spaces is used for the interleaved data acquisition, and further comprising the steps of:

[[-]]applying a number of n-1 first compensation pulses of a first amplitude,

[[-]]applying the second compensation pulse with a second amplitude, where the second amplitude is n-1 times the first amplitude.

9. (Cancelled)

10. (Currently Amended) ~~The~~ A magnetic resonance imaging device of ~~claim 9~~ comprising:

[[-]]means for interleaved k-space data acquisition in at least first and second k-spaces, the k-spaces having a first coordinate axis and a second coordinate axis,

[[-]]a control unit for generating of control signals for the means for k-space data acquisition, wherein the control signals ~~cause~~ causing the means for k-space data acquisition to:

- a) sample into a first direction along the first coordinate axis,
- b) apply a first ~~compensation~~ z-shimming pulse,
- c) sample into a second direction along the first coordinate axis, the second direction being opposite of the first direction,
- d) apply a second ~~compensation~~ z-shimming pulse,
- e) repetitively carry out the steps a) to d);

a reconstruction means for reconstructing the data acquired in the first direction into a first image and the data acquired in the second direction into a second image;

a means for combining the first and second images into a hybrid image.

11. (Currently Amended) A computer program product for k-space data acquisition for magnetic resonance imaging (MRI), the computer program product ~~comprising program means to perform~~ performing k-space data acquisition in at least first and second k-spaces having a first coordinate access in an interleaved way, by performing the steps of:

a) sampling into a first direction along the first coordinate axis,

b) applying a first compensation pulse,

c) sampling into a second direction along the first coordinate axis, the second direction being opposite to the first direction,

d) applying a second compensation pulse,

e) repetitively carrying out the steps a) to d),

f) reconstructing the data acquired in the first direction into a first image of a selected physical region,

g) reconstructing the data acquired in the second direction into a second image of the selected physical region,

h) combining the first and second images into a third image of the selected region.

12. (Cancelled)

13. (New) The method of claim 2 further comprising:

applying phase-encode pulse after every second sampling step to increment a sampling position such that the compensation pulses are applied after every sampling step and the sampling position is incremented after every second sampling step.

14. (New) The method of claim 2 wherein the sampling steps undersample the first and second k-spaces and wherein the combining step includes applying one of SENSE and SMASH methodology in accordance with coil sensitivities.

15. (New) The method of claim 2 wherein the first compensation pulse causes a next sampling in the second direction to have the second characteristic and the second compensation pulse is a rewind pulse that causes a next sampling in the first direction to again have the first characteristic.

16. (New) The method of claim 2 wherein the first and second characteristics include at least one of susceptibility characteristics, contrast characteristics, and dephasing characteristics.

17. (New) The magnetic resonance device of claim 10 wherein the first, second, and hybrid images are 2D images of a common physical region.

18. (New) The magnetic resonance device of claim 17 wherein the combining means combines the first and second 2D images using one of a sum of the squares and a maximum intensity projection.

19. (New) The computer program of claim 11 wherein the compensation pulses include z-shimming pulses.

20. (New) The computer program of claim 11 wherein the reconstructing steps include applying one of SENSE and SMASH methodology in accordance with coil sensitivities.

21. (New) The computer program of claim 11 wherein the steps further include:
applying a phase encoding pulse after at least one of each step a) and each step b).